



Gender-focused Training for Non-university Teachers in Spain, through Social Media

Elias Said-Hung

Universidad Internacional de La Rioja, Spain, elias.said@unir.net

Angela Martín-Gutiérrez

Universidad Internacional de La Rioja/ University of Seville, Spain,
angela.martin@unir.net

Jesús Conde-Jiménez

University of Seville, Spain, jconde6@us.es

The growth of social media has been suggested as a potential tool for teacher training and development. This study aims to identify patterns of SM use in the ongoing education of non-university teachers in Spain from a gender perspective. The research was based on a survey conducted between November 2021 and January 2022 involving 462 male and female non-university teachers. The data presented in this work reveals differences between teachers based on gender and associated patterns. It also highlights variables contributing to a better understanding of SM use and responsible use among female and male teachers. This study emphasizes teachers' role in implementing strategies to increase SM use among the studied population in Spain. This role requires promoting the dissemination and access to scientific knowledge from educational centres, training institutions, and university academic institutions. Actions should focus on providing relevant scientific content in appropriate and attractive formats to increase the use of SM as a continuous training resource.

Keywords: gender, social media, teachers, Spain, training, patterns

INTRODUCTION

The use of technology, mainly social media (SM), in education is an area that needs further exploration in teacher training. Saini and Abraham (2019) note that this topic has not been extensively studied. Lucas et al. (2021) emphasize the importance of the Digital Competence of Educators framework in shaping teacher training programs and informing educational policy and practice. This framework, which includes three substantial competence blocks, focuses on cultivating digital proficiency by enhancing educators' professional, pedagogical, and student body competencies (Redecker & Punie, 2017).

Citation: Said-Hung, E., Martín-Gutiérrez, A., & Conde-Jiménez, J. (2024). Gender-focused training for non-university teachers in Spain, through social media. *International Journal of Instruction*, 17(4), 341-358.

SM provide opportunities for education professionals to promote self-directed growth. According to Carpenter and Harvey (2019), SM covers personal to social aspects impacting the socio-ecological model's dimensions (intrapersonal, interpersonal, and community). Saini and Abraham (2019) differentiate professional from personal SM motivations. Professional motivations focus on career objectives, while personal motivations prioritize leisure, social interaction, and a sense of presence (Gil-Fernández & Calderón-Garrido, 2022).

Donelan (2016) identified various motivations for non-university teachers' SM usage, including external factors, self-development, network maintenance, and expansion. As Sánchez-Oliver, Otero-Saborido, and Fuentes-García (2017) suggested, these motivations can lead to connected teacher identity. Connected teachers can use SM to grow professionally, improve teaching practices, and foster students' digital competencies.

Despite criticism, educators commonly use SM to share and update educational information (Prenger, Poortman & Handelzalts, 2021). However, due to its academic value, it is essential to examine how teachers use SM to access, promote, disseminate, and impart scientific knowledge that supports their professional development (González et al., 2022).

Many researchers have focused on examining the potential of digital communication in teacher training, particularly in light of the COVID-19 pandemic. According to Remers and Schleicher (2020) and Lena-Acebo et al. (2023), non-university teachers require adequate support and training to perform their duties effectively. This support includes mentoring, coaching, forming collaboration networks, and participating in sustained and in-depth teacher training programs enabled by current technologies such as social media. Training these professionals is crucial for enhancing educational quality by updating their practices, questioning their traditions, and adopting new theoretical perspectives that revitalize their teaching models (Zaldívar, Quiróz & Medina, 2017). Social media platforms can facilitate information exchange through user interaction, utilizing new communication channels in these settings (Yildiz, 2018).

The importance of continuous-permanent training for teachers has been emphasized as mandatory by Aguilera-Mata, García-Martínez and Ràfols (2021), particularly when they possess the necessary skills and knowledge. With the European Commission's 2020 agenda highlighting the significance of digital skills in today's digital society (European Commission, 2020), alternative training scenarios that are technologically mediated and complement university-based training are needed to address the diverse realities of the centres where teachers work. Given the current digital scenario, its constant evolution, and the potential advantages that these contexts can provide, such as the maximization of the dissemination of scientific knowledge that can benefit teachers (Ojeda-Serna & García-Ruiz, 2022; Lena-Acebo et al., 2023), it is crucial for teachers to be proficient in using social media (SM). According to Gutiérrez-Ortega, García-Tamarit and Fandos-Igado (2020), factors such as the presence in the SM and the age and gender of teachers are essential. Further research on these factors, particularly from

a gender perspective, as assumed in this work, can provide valuable insights into the impact of SM on the continuous training of teachers.

Literature Review

Teachers tend to refrain from assuming an active role in any educational context, despite themselves being significant consumers of non-professional content on social media (Martínez-Gil et al., 2023). Kimmons and Veletsianos (2014) reported a lack of research on the impact of educator identity and participation patterns in SM on educational outcomes. However, gender's influence on SM use for education is a growing area of interest. Studies show significant correlations between gender and SM's impact on user development (Tham & Ahmed, 2011), with the gender variable predicting active teachers' digital competence (Lucas et al., 2021) and influencing their attainment of advanced levels (Mayor Buzón, García Pérez & Rebollo Catalán, 2019).

The scientific community is interested in understanding how teachers use SM, focusing on developing responsible habits and determining the perceived usefulness from a gender perspective. Valencia et al. (2020) stress the importance of considering the digital gender gap when examining the use and type of SM by males and females. Research by Krasnova et al. (2017) suggests that gender influences individuals' intentions to continue using SM, with females prioritizing relational uses and access to social information and males basing their intentions on obtaining general information. Tifferet's (2020) research further shows that females have more profiles on SM, are more active, and offer and receive more social support than males.

There exists a disparity in scholarly research concerning the gender perspective and the utilization of SM. For instance, Valencia et al. (2020) posited that male educators utilize SM more frequently than their female counterparts, who tend to use them more for communication purposes. Conversely, other studies suggest that gender does not impact the utilization and acceptance of SM for educational purposes (Van Den Beemt, Thurlings & Willems, 2020).

In Spain, research such as that conducted by Alsina and Rodríguez-Muñiz (2021) indicates that SM can be considered suitable for teacher training when employed responsibly. Furthermore, these platforms can promote innovation in the planning and developing of teacher training courses. However, to achieve this, SM requires the application of "an efficient criterion for selecting quality content, adjusting it to the educational context of each teacher, and distinguishing between entertainment and learning" (Aguilera-Mata, García-Martínez & Ràfols, 2021, p. 37).

According to Kerr and Schmeichel (2018), females are more concerned about SM (SM) privacy, sharing less personal information in their profiles than males. This finding is supported by other studies, such as Lin and Wang (2020), which emphasize the importance of privacy for females as opposed to males. This underscores the significance of responsible content creation, selection, and dissemination on SM in teacher training processes. Moreover, Loutou, Tselios, and Altanopoulou (2018) stress the need to extend the use of SM beyond assessing its usefulness for scientific access, continuous training, and updating in educational matters.

From a gender perspective, Gutiérrez-Ortega, García-Tamarit, and Fandos-Igado (2020) highlight differences between male and female non-university teachers in Spain regarding the perceived usefulness of SM. Females demonstrate greater engagement in exploring and learning new things and perceive SM as more valuable for their teaching work than males (Noguti, Singh, & Waller, 2019). Additionally, Lin and Wang (2020) highlight gender differences in the content and topics discussed on SM.

METHOD

This study seeks to discern the patterns of utilization of SM in the ongoing professional development of non-university educators in Spain, with a particular focus on gender-related aspects, as indicated by the inquiries posed in the conclusion of the introduction.

In order to promote gender equity while employing Social Media (SM) for the ongoing education of non-university teachers, this article focuses on the following questions: What SM patterns do Spanish non-university teachers exhibit for educational improvement? What responsible behaviours do they demonstrate when using SM for this purpose? Lastly, what is their perception of SM's usefulness for training in educational matters? It should be posed. The influence of the gender variable on the study object is of particular interest in all these questions. To this end, the following specific objectives (OE) are pursued:

- SO1. Discuss how teachers employ social media for instructional purposes and illustrate patterns of utilization based on the gender of the users.
- SO2. Recognize the responsible practices of educators when employing social media for instructional purposes and analyze patterns of responsible behaviour based on gender.
- SO3. Delve teachers' perceptions regarding the efficacy of the SM for instructor training and delineate patterns based on gender.

The following research hypotheses (H) are proposed:

- H1. There are differences based on gender in terms of the responsible habits of teachers when they use the SM to update educational matters.
- H2. There are differences based on gender regarding the use of the SM for updating educational matters.
- H3. There are differences based on gender in terms of the perception of the usefulness of SM for updating teachers on educational matters.

Based on a non-experimental, quantitative study, a survey was administered to a simple random sample of 463 non-university professors, with a margin of error of $\pm 4.5\%$ and a confidence level of 95%. The sample was drawn between November 2021 and January 2022. Of the 463 participants, 178 were men ($\pm 7.3\%$ and 95% confidence level), and 277 were women ($\pm 5.9\%$ and 95% confidence level). The sample selection was based on the prior identification of the number of non-university teachers working in educational centres registered by the Ministry of Education and Vocational Training of the Government of Spain in 2021. The population studied comprised 29,330 non-university teachers from Teaching Centers for the 2021-2022 academic year. The

survey was administered to all those responsible (directors) of these centres, requesting their voluntary participation.

The participating non-university teachers in the study were predominantly female, with an average age of 48 and more than 20 years of experience since earning their undergraduate degrees. Approximately 61% of the respondents held degrees in Arts and Humanities or Social and Legal Sciences, and over half (53.1%) did not possess a master's degree. Most of the participants worked as secondary education teachers in public schools. Additionally, 36.4% of those employed in private institutions were taught in concerted centres, and a substantial portion were taught in daytime centres. Table 1 presents the profile of the respondents according to the gender variable.

Table 1
Profile of non-university teaching staff according to gender

Non-university professors (males)	49 years. Twenty-four years since obtaining the bachelor's degree, most associated with areas of knowledge related to titles from the Social and Legal Sciences and Arts and Humanities (51%). Fifteen years after obtaining a master's degree, only 45.2% have it, and only 11.8% have a doctorate. 57% of those surveyed work in public institutions. 78% exercise their profession in primary, secondary, baccalaureate or non-university higher education. 97% work under a daytime teaching modality.
Non-university teaching staff (females)	47 years. Twenty-four years after obtaining the bachelor's degree, it is mainly associated with areas of knowledge related to titles from the Social and Legal Sciences and Arts and Humanities (67.9%). 14 and 13 years after obtaining the master's degree and/or doctorate, half (55.2%) of the sample did not have any of these educational levels. 70% work in public non-university educational institutions. 70% practice their profession at the secondary, baccalaureate or non-university higher education level. 96% work under a daytime teaching modality.

Source: Created by authors.

The questionnaire administered to non-university educators comprised 40 inquiries aimed at eliciting information on the socio-educational and academic characteristics of the studied population, their employment standing, SM practices, and perceptions regarding digital informal communication and learning situations (as illustrated in Table 2).

Table 2
 Areas, variables and dimensions studied in a survey applied to the study population

Scope of study	Variable name
socio-educational	Age (year of birth)
	Branch of knowledge associated with the title (e.g., Social and Legal Sciences, Sciences, Arts and Humanities)
	Master's degree possession (Yes or No)
	Possession of a doctoral degree (Yes or No)
	Enabling the nature of the master's degree for teaching (The master's degree studied is allowing the exercise to as a teacher or not)
	Branch of knowledge of the master's degree associated with the degree (e.g., Social and Legal Sciences, Sciences, Art and Humanities)
	Branch of knowledge of the doctorate associated with the degree (e.g., Social and Legal Sciences, Sciences, Art and Humanities)
Labour	The educational level where you work (e.g. Early Childhood Education, Primary Education, Secondary Education, High School, Vocational Training)
	Type of educational institution (e.g., Public Center, Private Center)
	Teaching modality of the centre (e.g. daytime, evening, online education, distance education, blended)
The habit of using SM	Perception of the usefulness of the SM (e.g., Assessment of the usefulness in access to scientific knowledge, educational innovations, updating of the subjects taught)
	Continuous academic use of the SM (Very little to a lot)
	Weekly access to SM (SM access days per week)
	SM for access to scientific knowledge (Level of use of SM for access to scientific knowledge)
	Type of scientific knowledge through the SM (e.g. books, articles, infographics)
	Scientific content formats (e.g. articles published in academic journals, abstracts, infographics)
	The academic perception around the SM (Very low to very high)
	Academic environments before the SM (e.g., General assessment of the use of SM in access to scientific knowledge, problems in access to this type of knowledge, preference in access from journals of this knowledge)
	Characteristics of academic use of the SM (e.g. Assessment of the verification of scientific dissemination made by the SM, adaptation of scientific results in teaching)
	Reason for using the SM (e.g., Improvement of my working conditions, Improvement of my working conditions Greater professional visibility)
	Reasons for not using the SM (e.g. Lack of time, Lack of interest, Lack of knowledge)

Source: Created by authors.

A pilot study of 96 non-university professors assessed the survey's reliability, yielding an alpha coefficient of .9575. Based on the study's scientific objectives, the questionnaire was adapted and grouped into three Likert-type factors, ranging from 1 to 5, with 14 items selected. The validity and reliability of the selected scales were calculated to ensure data quality. The total variance explained ranged from 59.095% (U

Scale) to 72.189% (PU Scale), and the reliability of the scales ranged from .768 (RES Scale) to .804 (U Scale) with an overall reliability of .890. Removing any of the variables did not significantly affect the overall reliability value.

Table 3
Factors and questions selected from the study

Factors	Questions
Uses of the SM (U)	U1. 'Through SM, I access educational news from scientific research.' U2. 'SM are my main source of updates on educational matters based on scientific research.' U3. 'When I get educational content from scientific research, I share it with fellow teachers, like it, and comment on it.' U4. 'I adapt the research results and use them in teaching in my classroom.' U5. 'Through SM, I exchange what I consider useful for educational improvement with other teachers, which is the product of scientific research.'
Responsible use of the SM in educational matters (RES)	RES1. 'I directly take the data that the social media distributes.' RES2. 'I checked some data that the social media disclosed about the result of the research.' RES3. 'I read extensively the article to which the social media refers.' RES4. 'I apply the research results and use them in teaching.' RES5. 'I care about the repository in which the queried document is located.' RES6. 'I always consider some criteria of origin of the information to decide if I read it or use it in my teaching activity (Repositories, universities, other, database indexing).'
Perception of the usefulness of SM (PU)	PU1. 'SM provide teachers with access to scientific knowledge in their field.' PU2. 'SM are handy for teachers who want to improve their work based on scientific knowledge.' PU3. 'I prefer the scientific knowledge in educational matters that I obtain through SM due to the various formats in which they are published (summaries, reviews, infographics, videos, podcasts).'

Source: Created by authors.

The data collection instrument was created using QuestionPro and disseminated online from November 2021 to January 2022. Email addresses of national teaching staff were obtained from the Ministry of Education and Vocational Training's State Registry of Non-University Teaching Centers (2019). This information was used to send official project information and a formal request for support in accessing the instrument to the teaching staff associated with these teaching-learning scenarios.

Statistical analyses involved calculating the mean, minimum, maximum, and standard deviation and conducting the student's t-test for independent samples. The Levene test determined equal variances, while the CHAID growth method, or Chi-squared Automatic Interaction Detection, generated decision trees to classify teachers into gender-based groups.

The data collected in this study was processed and statistically analyzed using the SPSS v.26 statistical program.

FINDINGS

Patterns of use of SM

The findings related to non-university teachers' use of SM for professional development in educational matters indicate an average score of 3.27 out of 5. This score indicates a generally positive attitude towards using SM for educational purposes, as reflected in the scale's specific items, with scores ranging from 3.32 to 3.62. The highest mean value was observed for item U4, which involves adapting research results for use in the classroom. Conversely, item U2, which pertains to SM being the primary source of updates on educational matters based on scientific research, received a score of 2.81, placing it below the central part of the scale.

Concerning differences based on gender, the null hypothesis of equality is accepted as no statistically significant differences are generally detected (p-value greater than 0.05) regarding the use of networks for updating non-university teaching staff. However, an exception is found in item U5, 'Through SM, I exchange with other teachers what I consider useful for educational improvement, and that is the product of scientific research', where significant differences based on gender are observed (p-value less than .05). In this case, females have an average score of 3.33, compared to males (3.02), indicating that females engage in a more significant exchange with other teachers on educational improvement.

Table 4
Total descriptive data and by gender of Variable U

Variables	Category - Items	Gender	Mean	Min	Max	Standard deviation
OR	Use	Total	3.27	1	5	0.872
		Man	3.18	1	5	0.880
		Females	3.35	1	5	0.858
U1	'Through SM, I access educational news resulting from scientific research.'	Total	3.32	1	5	1,137
		Male	3.26	1	5	1,102
		Females	3.38	1	5	1,140
U2	'SM are my main source of updates on educational matters based on scientific research.'	Total	2.81	1	5	1,156
		Male	2.70	1	5	1,123
		Females	2.88	1	5	1,176
U3	'When I get educational content from scientific research, I share it with fellow teachers, like it, and comment on it.'	Total	3.37	1	5	1,214
		Male	3.31	1	5	1,259
		Females	3.43	1	5	1,192
U4	'I adapt the research results and use them in teaching in my classroom.'	Total	3.70	1	5	0.989
		Male	3.62	1	5	1,010
		Females	3.74	1	5	0.969
U5	'Through SM, I exchange what I consider helpful for educational improvement with other teachers, which is the product of scientific research.'	Total	3.20*	1	5	1,178
		Male	3.02	1	5	1,208
		Females	3.33	1	5	1,140

Source: Created by authors.

Note. * statistically significant, p values less than 0.05.

Figure 1 presents a decision tree in the study that identifies significant patterns of SM usage among males. The tree is divided into three nodes, two of which are terminal. The dependent variable, SM usage, is divided into three levels: low, medium, and high. The study found that U5 is the only independent variable distinguishing male SM usage. Specifically, male teachers' perception of SM's utility for collaboration with other educators is significantly associated with their SM usage.

SM (SM) among male teachers is mainly associated with interaction with other teachers and is divided into two profiles. The first profile consists of those with a lower perception of SM use, where 59.3% find it useful for their tasks, while 40.7% have a low level of use. The second profile has a higher perception of SM use for teacher interaction, with 75% having a low level of SM use and 25% having a medium level.

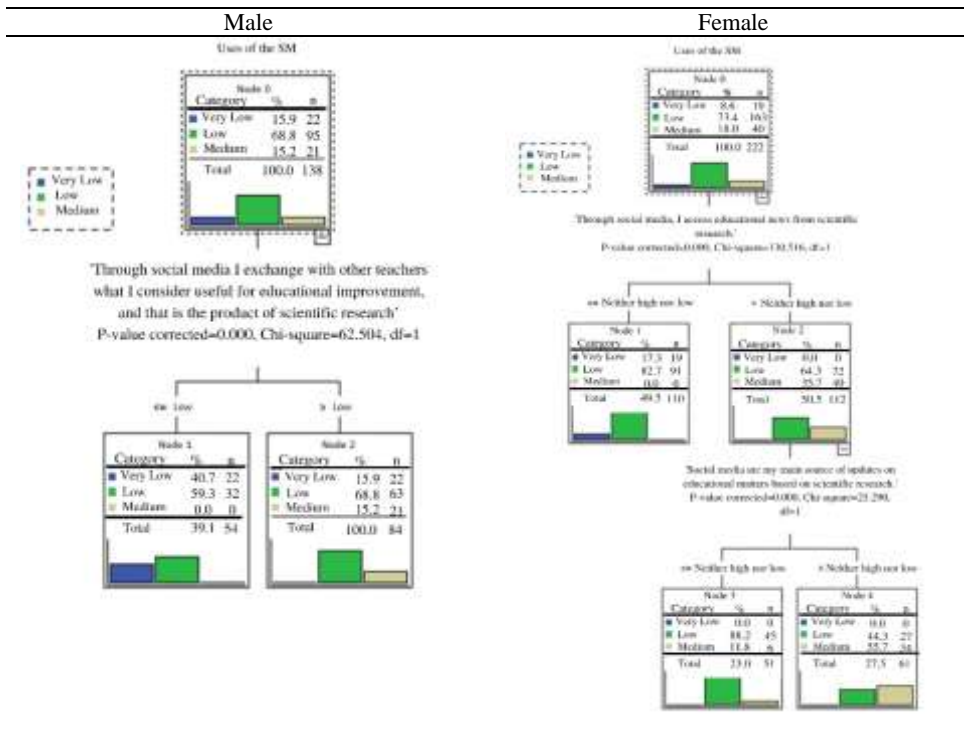


Figure 1
Uses of the SM (Male versus Female)
Source: Created by authors

The decision tree in the study for female teachers shows significant associations between the independent variables U1 to U5 and the dependent variable U. The results show two levels of depth and five nodes, with 73.4% of female teachers having a favourable view of SM use and using it at a low level, compared to 18% who use it at a medium level and 8.6% who use it at a shallow level. The results shown in Figure 1

suggest two distinct patterns among female teachers regarding SM usage. The first group comprises individuals with a low perception of SM usage, with 82.7% indicating a low usage level for educational purposes derived from research. The second group includes those with a high or higher perception of SM usage, where 64.3% perceive their usage to be low and 35.7% medium. Teachers in this second group are further divided into two categories based on the extent to which SM is the primary source of professional and educational updates based on scientific research. The first category consists of teachers with a medium or lower level of preference (88.2% of whom consider their level to be low), while the second category consists of teachers with a high or higher level of preference for the topic at hand (44.5% consider their level to be low, compared to 55.7% who consider it to be half).

Upon completing the analysis in response to the initial objective, the forecasted results indicate a 68.8% and 76.6% accuracy in classifying male and female subjects, respectively.

Patterns of responsible behaviour in the SM

Concerning the second objective, which aims to describe the responsible practices of teachers in using SM to update themselves on educational matters and to identify responsible behaviour patterns based on gender, a moderate level of responsibility is observed, with a tendency towards the positive end of the scale (see Table 5). This trend is generally sustained in the other specific items related to this variable, except for RES1 item 'I directly take the data that the SM distributes', where the average values are slightly below 3, in the middle part of the scale. These responsible behaviour patterns are consistent among males and females, as no statistically significant differences are detected based on gender, with all p-values exceeding 0.05.

Table 5
Total descriptive data and by gender of the Variable RES

Variables	Category - Items	Gender	Mean	Min	Max	Standard deviation
BEEF	Responsibility	Total	3.35	1	4.83	0.648
		Male	3.32	1.17	4.67	0.703
		Females	3.38	1	4.83	0.600
RES1	'I directly take the data that the SM distributes.'	Total	2.65	1	5	0.927
		Male	2.59	1	5	0.881
		Females	2.69	1	5	0.948
RES2	'I checked some data that the SM disclosed about the result of the investigation.'	Total	3.32	1	5	0.996
		Male	3.33	1	5	1.096
		Females	3.33	1	5	0.919
RES3	'I read extensively the article to which the SM refers.'	Total	3.27	1	5	0.999
		Male	3.19	1	5	1.010
		Females	3.34	1	5	0.980
RES4	'I adopt the research results and use them in teaching.'	Total	3.46	1	5	0.911
		Male	3.41	1	5	0.974
		Females	3.49	1	5	0.868

Source: Created by authors.

Note: * statistically significant, p values less than 0.05.

This study examines the differences between male and female teachers concerning the dependent variable RES. The decision tree presented in Figure 2 reveals that only the independent variable RES3 significantly correlates with RES. The tree has a single level of depth and contains three nodes and two terminals. Among male teachers, the node labelled RES3 indicates varying levels of responsible use, with 86.4% demonstrating low, 7.1% meagre, and 6.4% medium levels.

The study found that only male professors' in-depth reading of academic publications referenced in the SM significantly affects the responsible use of SM. Two patterns of responsible behaviour were observed among those with a low perception of responsible use of SM, with 87.7% belonging to the first group and 84.7% belonging to the second group. However, the second group also included 15.3% who read the articles at a medium level.

The relationship between female behaviour and SM use for education is complex (Figure 2). Females generally exhibit more responsible use than males, with 89.2% of females showing low levels of responsible use and only 4.7% showing deficient levels. The classification tree obtained from the data has one level and three nodes, with in-depth reading of academic publications being the only independent variable associated with responsible use. Two patterns of behaviour are associated with responsible use, one for females with lower perception and another for those with higher perception. In the first group, 90.4% reported low levels of in-depth reading, while in the second group, 88.1% reported low levels, and 11.9% reported medium levels.

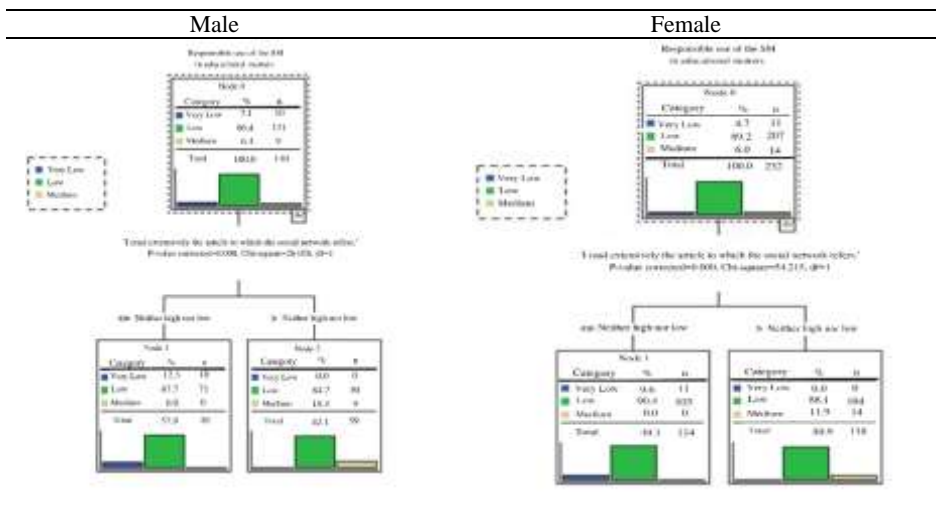


Figure 2
Responsible use of the SM in educational matters (Male versus Female)
Source: Created by authors

For the second objective, the predicted results demonstrated an accuracy of 86.4% for males and 89.2% for females.

Patterns of the usefulness of the SM

The study suggests that SM is perceived as a medium in terms of usefulness for non-university teachers in educational matters, with a positive trend (Table 6). This perception holds for all variables that make up the global perception, including PU1, PU2, and PU3. In the PU2 variable, 'I consider that SM provides teachers with access to scientific knowledge in their field', male respondents perceive SM as less valuable for teachers who wish to improve their practice than female respondents.

Table 6
Total descriptive data and by gender of the Variable PU

Variables	Category - Items	Gender	Mean	Min	Max	Standard deviation
PU	Utility Perception	Total	3.47	1	5	0.876
		Male	3.36	1	5	0.881
		Females	3.55	1	5	0.867
PU1	'SM provide teachers access to scientific knowledge in their field.'	Total	3.67	1	5	1,031
		Male	3.58	1	5	1,025
		Females	3.73	1	5	1,034
PU2	'SM are handy for teachers who want to improve their work based on scientific knowledge.'	Total	3.62*	1	5	1,025
		Male	3.47	1	5	1,052
		Females	3.72	1	5	0.996
PU3	'I prefer the scientific knowledge in educational matters that I obtain through SM due to the various formats in which they are published (summaries, reviews, infographics, videos, podcasts).'	Total	3.11	1	5	1,038
		Male	3.03	1	5	1,086
		Females	3.18	1	5	1,008

Source: Created by authors

Note. * statistically significant, p values less than 0.05

Regarding recognizing intra-group operational patterns, the male participants showed no discernible influence on their overall perception of the group's usefulness (Figure 3). A substantial majority, 73.4%, reported a low assessment of the group's usefulness in SM, 17.3% considered it average, and 9.4% held a meagre opinion.

Females prioritize SM's usefulness more than males (Figure 3). While 67.8% of females perceive SM's helpfulness as low, 25.1% find it to be of medium utility. A decision tree with one depth level and four nodes (three terminals) illustrates different behaviours among females. The tree is determined by the perceived usefulness of SM in enhancing teaching work, which is a statistically significant and non-uniform association for female teachers. This association is linked to three patterns: 1) a group of those with medium or lower levels of perceived usefulness, with 81% considering it to have low utility in their professional work and 19% viewing it as very low; 2) a group of those with medium-high levels of SM usefulness perception, with 86.7% considering it to have low utility in their professional work and 13.3% viewing it as medium; and 3) a group of those with very high levels of perceived usefulness of SM, with 84.9% considering it to have medium utility in enhancing their professional tasks and 15.1% viewing it as low.

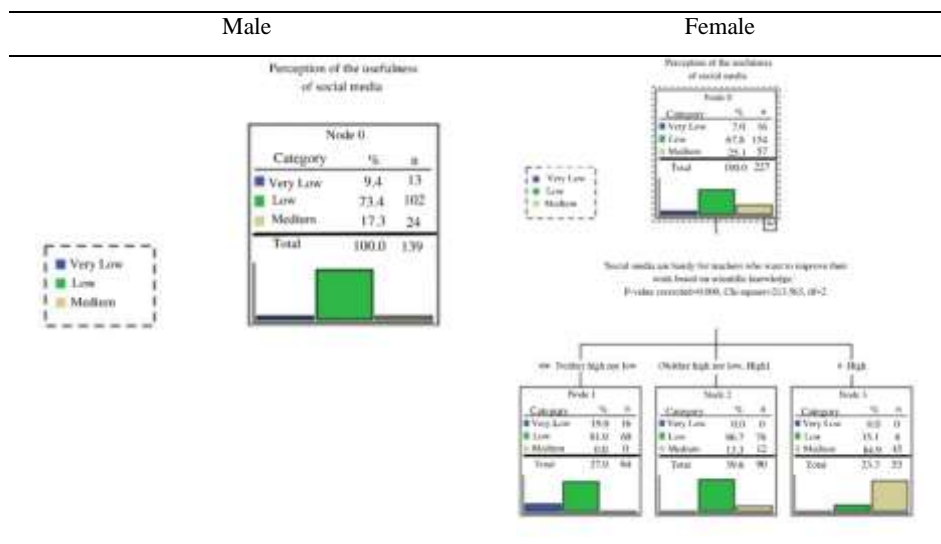


Figure 3
 Perception of the usefulness of SM (Male versus Female)
 Source: Created by authors

The projected outcomes indicate that 73.4% of males and 84.1% of females were accurately classified.

DISCUSSION

The research indicates that gender should be considered when developing alternative teaching strategies for non-university teachers, as suggested by Sánchez-Oliver, Otero-Saborido and Fuentes-García (2017). By considering the differences in perception of SM use between males and females, the study aims to fully leverage the potential of digital resources in Spain. Female teachers seem to have a slightly higher level of self-awareness regarding SM use, possibly due to more opportunities to develop digital pedagogical skills, as highlighted by Redecker and Punie (2017).

Female professionals in the non-university educational sector can effectively utilize digital resources and may have higher motivational levels, as stated by Donelan (2016) and Saini and Abraham (2019). This can differentiate the 'connected teacher' concept proposed by Sánchez-Oliver, Otero-Saborido, and Fuentes-García (2017) by recognizing that non-university teachers, who tend to have higher levels of perception, may have a more significant potential to generate revenue from SM for their professional development. There are no significant differences in the perception of responsible behaviour towards digital resources between males and females.

The study found no significant difference in the perception of responsible habits in SM use between males and females, indicating the rejection of H1. This supports H2 and H3 proposed in the study, as there are differences between genders in the usefulness of scenarios for continuous training in teaching. This study extends previous research by

Prenger et al. (2021) and emphasizes the importance of considering the gender perspective to fully utilize SM as a resource for updating educational professionals. This is consistent with the modulating role of gender, as highlighted by Kimmons and Veletsianos (2014).

The data indicates various profiles among the Spanish university teaching staff, exhibiting diverse perceptions of SM's use and responsibility. Gender influences these perceptions, leading to specific actions for promoting SM in continuous training for both female and male teachers. Prioritizing strategies to increase the dissemination and accessibility of scientific knowledge, along with responsible behaviour among non-university teachers, is crucial. Studies by Kerr and Schmeichel (2018), Alsina and Rodríguez-Muñoz (2021), and Aguilera-Mata and García-Martínez (2021) emphasize the need to foster a closer relationship between female university professors and SM through increased engagement and comprehensive reading of current events. SM's capacity for knowledge exchange more significantly impacts male non-university teaching staff. Above all, if we consider that the gender approach has not yet been used to promote the topic addressed in this work in Spain.

One of the key accomplishments of this study is highlighting the importance of revisiting methodologies to promote the incorporation of social networks in educational settings with a gender-sensitive perspective. This would involve fostering the development of competencies that would enable non-university educators to employ social media more effectively. Such an approach could have a favourable impact on the educational environment and the teaching process, as improved utilization of social networks could result in creating technology-enhanced teaching models, where students would be more likely to acquire digital skills essential in today's society. For this, it looks vital to consider a gender perspective when devising strategies to achieve these objectives, as this could help identify "connected teachers," particularly experts in employing social networks for specific tasks. These professionals could serve as leaders in transforming educational institutions, reducing digital disparities, and creating an impact in favour of pedagogical scenarios facilitated by social media.

CONCLUSION

The study proposed in this work, which focuses on quantitative research and a sample based on data and discussions, aims to gain increasing interest among non-university teachers and the educational field. The issue is explored from two perspectives: the need to consider gender in future research beyond the limitations of this article and the identification of traits that influence the perception of SM use for continuous training among both males and females.

The work highlights the importance of developing strategies that acknowledge the potential of digital scenarios and address the disconnect between non-university teachers and academic research. This involves providing accessible, professionally relevant information to bridge the gap.

It is crucial to recognize the significance of non-university female teachers and their potential impact on the educational field and teaching-learning activities to address the

current context. Thus, we suggest that creating a more favourable environment for using SMs and enhancing continuous training mechanisms can lead to substantial progress. This approach aligns with the recommendations of researchers such as Remers and Schleicher (2020), Aguilera-Mata, García-Martínez and Ràfols (2021), and Lena-Acebo et al. (2023), all of whom emphasize the importance of adhering to a gender perspective when designing support and training mechanisms for non-university professionals. By providing these individuals with the necessary tools and resources, we can improve the quality of their teaching, which, in turn, will positively impact the educational field in Spain. In line with our research findings, we propose that SMs can serve as complementary spaces for the training received by non-university teachers in Spain.

The text above highlights an additional aspect crucial to the work being discussed. This aspect is the necessity of implementing effective communication strategies to enhance non-university teachers' perception of social media for continuous professional development. It is imperative to emphasize the importance of this aspect. Incorporating scientific information into educational settings can enhance the utilization of social media as a training tool. Achieving this objective necessitates expanding institutional measures beyond the confines of the workplace and the engagement of relevant institutions, such as Educational Councils and Departments. The active involvement of academic and research personnel can also contribute to the broader dissemination of scientific knowledge in engaging formats.

REFERENCES

- Aguilera-Mata, R., García-Martínez, S. & Ràfols, E. (2021). Las redes sociales como herramienta de formación docente: reflexiones y experiencias personales [Social media as a teacher training tool: reflections and personal experiences]. *Revista Electrónica Transformar*, 2(1), 30-40.
- Carpenter, J. P. & Harvey, S. (2019). "There's no referee on social media": Challenges in educator professional social media use. *Teaching and teacher education*, 86, 102904. <https://doi.org/10.1016/j.tate.2019.102904>
- Donelan, H. (2016). Social media for professional development and networking opportunities in academia. *Journal of Further and Higher Education*, 40(5), 706-729. <https://doi.org/10.1080/0309877X.2015.1014321>
- European Commission (2020). *Digital technologies - actions in response to coronavirus pandemic: Skills, collaborative working, and creativity*. Author.
- Gil-Fernández, R. & Calderón-Garrido, D. (2022). Educational Use of Social Media in Primary and Childhood Education Degrees at a Virtual University. *International Journal of Instruction*, 15(4), 395-410. <https://doi.org/10.29333/iji.2022.15422a>
- Gutiérrez-Ortega, M., García-Tamarit, C., & Fandos-Igado, M. (2020). Progress and Resistance of Teachers at the Use of Smart Mobile Devices (SMD) and Social Media Sites (SNS). *Education in the Knowledge Society*, 21(30), 1-12. <https://doi.org/10.14201/eks.23453>

- Kerr, S. L. & Schmeichel, M. J. (2018). Teacher Twitter Chats: Gender Differences in Participants' Contributions. *Journal of Research on Technology in Education*, 50(3), 241-252. <https://doi.org/10.1080/15391523.2018.1458260>
- Kimmons, R. & Veletsianos, G. (2014). The fragmented educator 2.0: SMing sites, acceptable identity fragments, and the identity constellation. *Computers & education*, 72, 292-301. <https://doi.org/10.1016/j.compedu.2013.12.001>
- Krasnova, H., Veltri, N. F., Eling, N. & Buxmann, P. (2017). Why men and women continue to use social networking sites: The role of gender differences. *The Journal of Strategic Information Systems*, 26(4), 261-284. <https://doi.org/10.1016/j.jsis.2017.01.004>
- Lena-Acebo, F., Pérez-Escoda, A., García-Ruiz, R. & Fandos-Igado, M. (2023). Social media and smartphones as teaching resources: Spanish teacher's perceptions. *Pixel-Bit*, 66, 239-2760. <https://doi.org/10.12795/pixelbit.96788>
- Lin, X. & Wang, X. (2020). Examining gender differences in people's information-sharing decisions on social networking sites. *International Journal of Information Management*, 50(C), 45-56. <https://doi.org/10.1016/j.ijinfomgt.2019.05.004>
- Loutou, S., Tselios, N., & Altanopoulou, P. (2018). The effect of twitter-mediated activities on learning outcome and student engagement: A case study. *Computer Society*. <https://arxiv.org/abs/1803.01343>
- Lucas, M., Bem-Haja, P., Siddiq, F., Moreira, A. & Redecker, C. (2021). The relation between in-service teachers' digital competence and personal and contextual factors: What matters most? *Computers & Education*, 160, 104052. <https://doi.org/10.1016/j.compedu.2020.104052>
- Martínez-Gil, T., Gil-Fernández, R., Calderón-Garrido, D. & Martín-Piñol, C. (2023). Virtual Learning Communities Mediated through Instagram: PreTeachers as Creators of Environments through Visual Narratives. *International Journal of Instruction*, 16(4), 827-844. <https://doi.org/10.29333/iji.2022.15422a>
- Mayor Buzón, García Pérez, P., Rebollo, R. & Catalán, Á. (2019). Explorando factores predictores de la competencia digital en las redes sociales virtuales [Exploring factors predicting digital competence in social networking sites]. *Pixel-Bit. Revista De Medios y Educación*, 56, 51–69. <https://doi.org/10.12795/pixelbit.2019.i56.03>
- Ministry of Education and Vocational Training of the Government of Spain (2021). *Registro estatal de centros docentes no universitarios [State registry of non-university teaching centers]*. Retrieved 15 December, 2023 from <https://bit.ly/3IPBWM8>
- Noguti, V., Singh, S. & Waller, D. S. (2019). Gender Differences in Motivations to Use Social Networking Sites. In I. Management Association (Ed.), *Gender Economics: Breakthroughs in Research and Practice* (pp. 676-691). IGI Global. <https://doi.org/10.4018/978-1-5225-7510-8.ch033>

Ojeda-Serna, V. & García-Ruiz, R. (2022). Divulgación científica en YouTube en Latinoamérica. Estudio de Casos de universidades, museos y YouTubers. *Revista Eureka*, 19(2), 220401-220416.

https://doi.org/10.25267/Rev_Eureka_ensen_divulg_cienc.2022.v19.i2.2204

Prenger, R., Poortman, C. & Handelzalts, A. (2021). Professional learning networks: From teacher learning to school improvement? *Journal of educational change*, 22(1), 13-52. <https://doi.org/10.1007/s10833-020-09383-2>

Redecker, C. & Punie, Y. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu*. Publications Office of the European Union.

Reimers, F., y Schleicher, A. (2020). *Schooling disrupted, schooling rethought. How the Covid-19 pandemic is changing education*. Organization for Economic Cooperation and Development.

Alsina, L. & Rodríguez-Muñiz, L. (2021). Hilos de estadística y probabilidad en Twitter®: una nueva herramienta para el desarrollo profesional del profesorado de matemáticas [Statistics and probability threads on Twitter®: a new tool for the professional development of mathematics teachers]. *Educação Matemática Pesquisa*, 23(4), 021-053.

Saini, C. & Abraham, J. (2019). Modeling educational usage of social media in pre-service teacher education. *Journal of Computing in Higher Education*, 31, 21–55. <https://doi.org/10.1007/s12528-018-9190-4>

Sánchez-Oliver, A., Otero-Saborido, F.M. & Fuentes-García, I. (2017). Propuesta de innovación docente en educación superior a través del uso de las redes sociales [Proposal of teaching innovation in university through the use of social media]. *Revista Infancia, Educación y Aprendizaje*, 3(2), 356-362. <https://doi.org/10.22370/ieya.2017.3.2.748>

Tham, J. & Ahmed, N. (2011). The usage and implications of SMing sites: A survey of college students. *Journal of Interpersonal, Intercultural and Mass Communication*, 2(1), 1-11.

Tifferet, S. (2020). Gender differences in social support on social media sites: A meta-analysis. *Cyberpsychology, Behavior, and SMing*, 23(4), 199-209. <https://doi.org/10.1089/cyber.2019.0516>

Valencia, R., Cabero, J. & Garay, U. (2020). Influencia del género en el uso de redes sociales por el alumnado y profesorado [The influence of gender in the use of social media by students and teachers]. *Campus Virtuales*, 9(1), 29-39.

Van Den Beemt, A., Thurlings, M. & Willems, M. (2020). Towards an understanding of social media use in the classroom: a literature review. *Technology, Pedagogy and Education*, 29(1), 35-55. <https://doi.org/10.1080/1475939X.2019.1695657>

Yildiz, H. (2018). Examining the acceptance and use of online social networks by preservice teachers within the context of unified theory of acceptance and use of

technology model. *Journal of Computing in Higher Education*, 31, 173-209.
<https://doi.org/10.1007/s12528-018-9200-6>

Zaldívar, J. D., Quiroz, S. A., y Medina, G. (2017). La modelación matemática en los procesos de formación inicial y continua de docentes. *IE Revista de Investigación Educativa de la REDIECH*, 8(15), 87-110.
https://doi.org/10.33010/ie_rie_rediech.v8i15.63